



Workforce

June 1, 2006



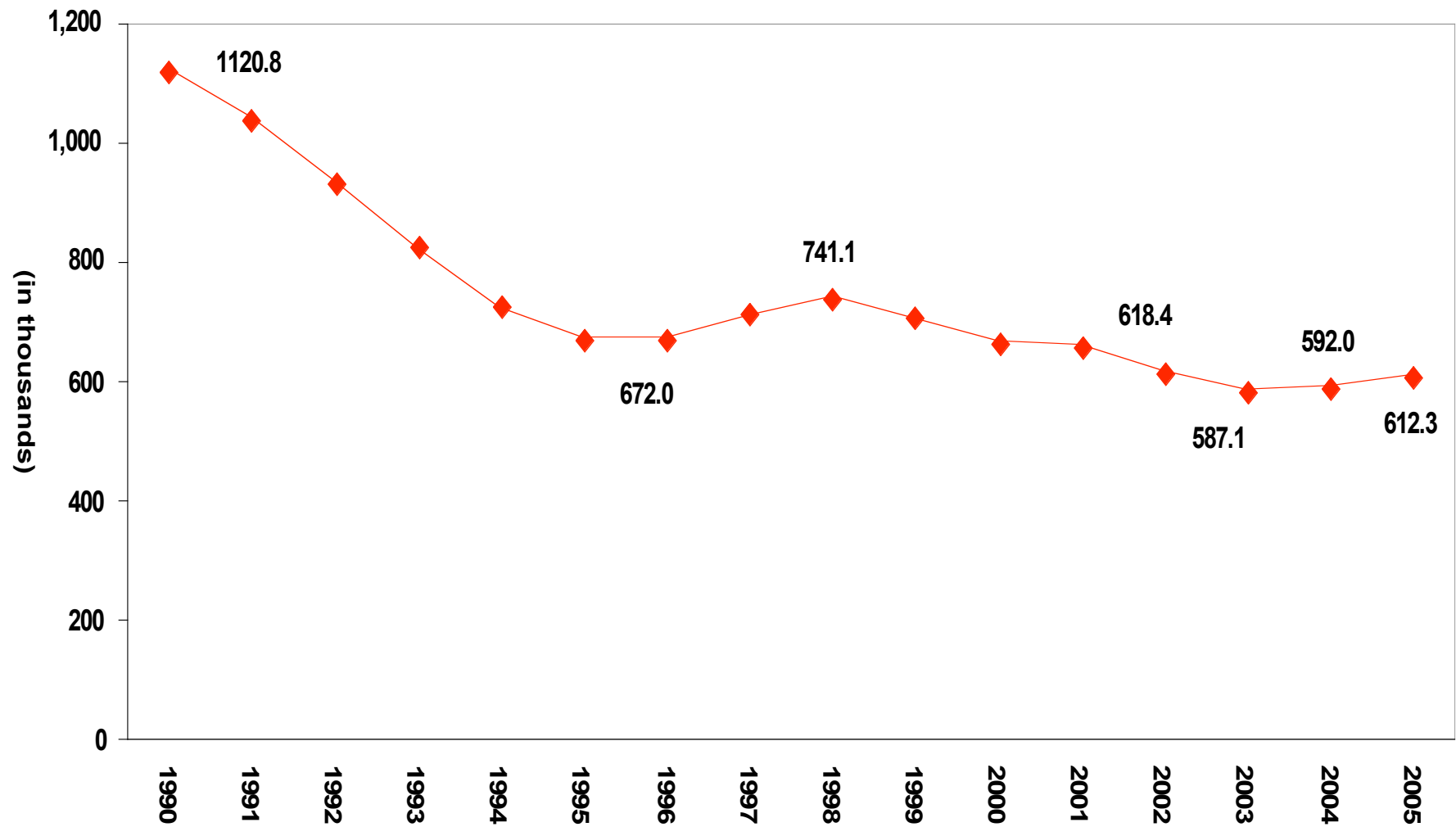
Workforce Challenges

■ Problem:

- The aerospace workforce is "aging" and 26-27% of aerospace workers are eligible to retire by 2008. (Aerospace Commission)
- The portion of workers 34 or younger has declined from 32% in 1992 to 16% in 2003 (BLS).
- In 1979 aerospace employed 20% of this nation's research and development scientists and engineers – in 2003 it's 3%. (NSF)
- By 12th grade, U.S. high school students' math and science performance ranks near the bottom internationally. A shortage of math and science teachers compounds the problem as do fewer engineering and science students earning degrees – from undergraduate to doctorate – at U.S. colleges and universities. (Aerospace Commission)
- 40% of students now earning engineering and science doctorates are foreign and often return to their native countries or cannot work on sensitive defense programs. (Aerospace Commission)

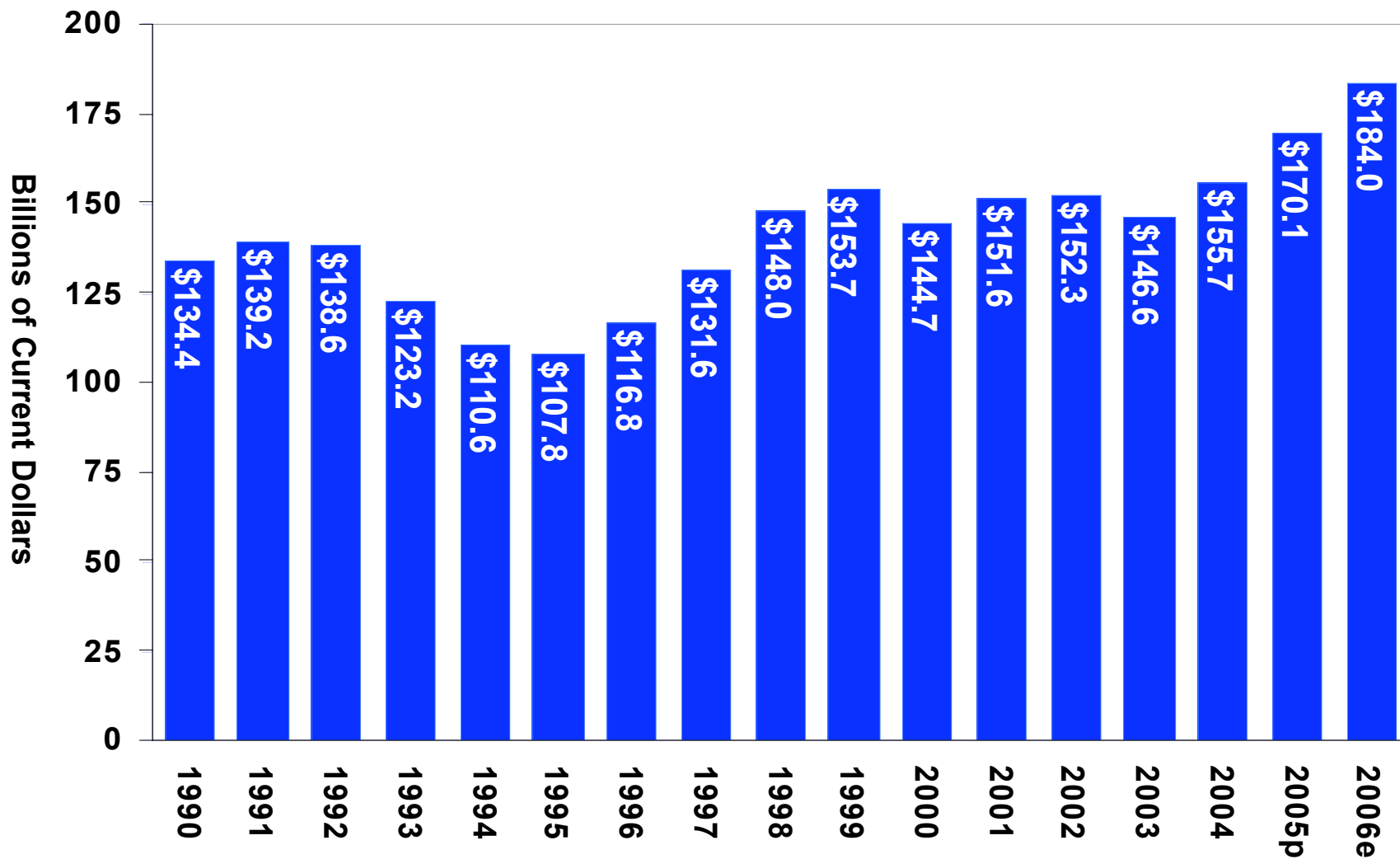


“Aerospace” Employment



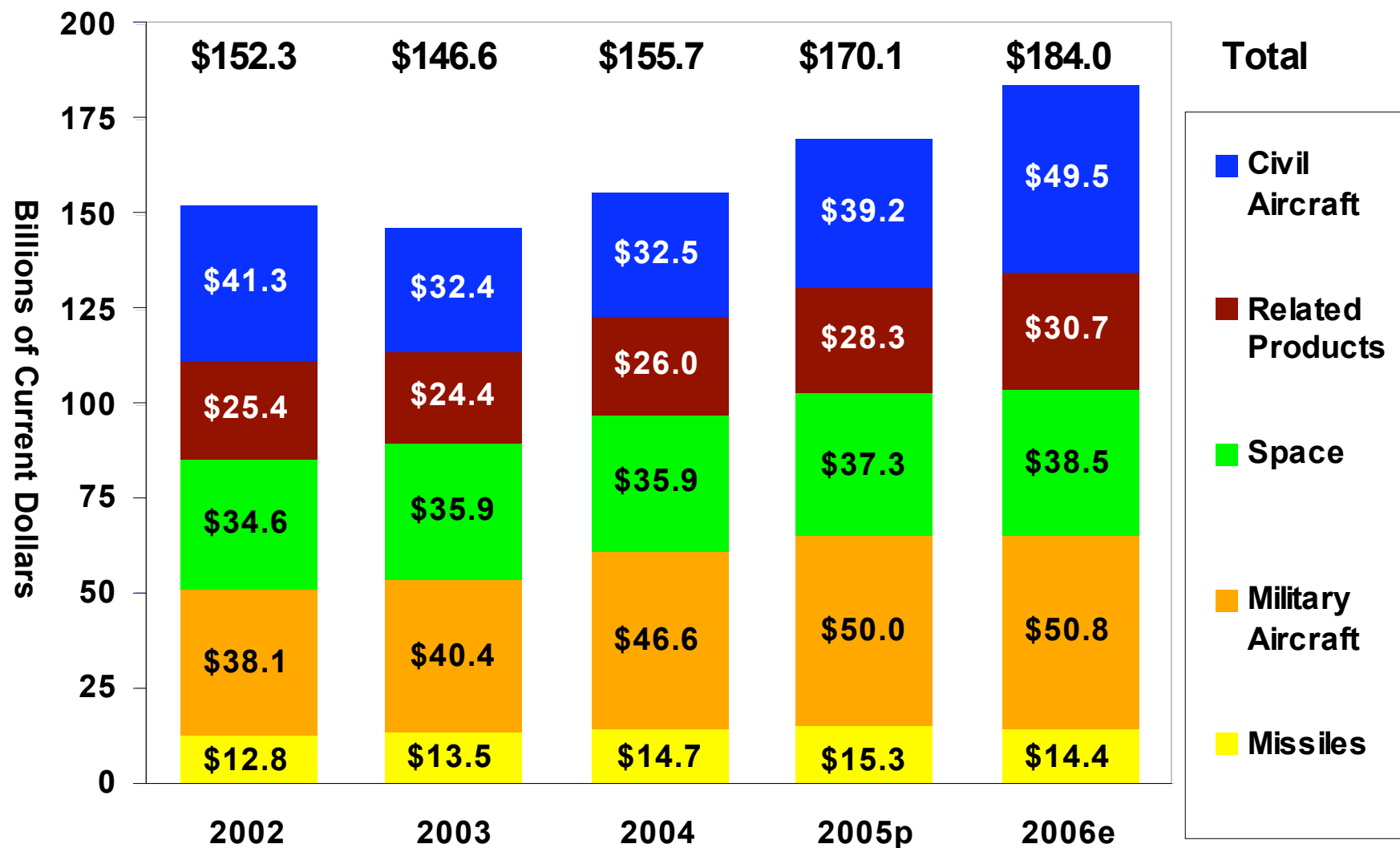


Aerospace Industry Sales





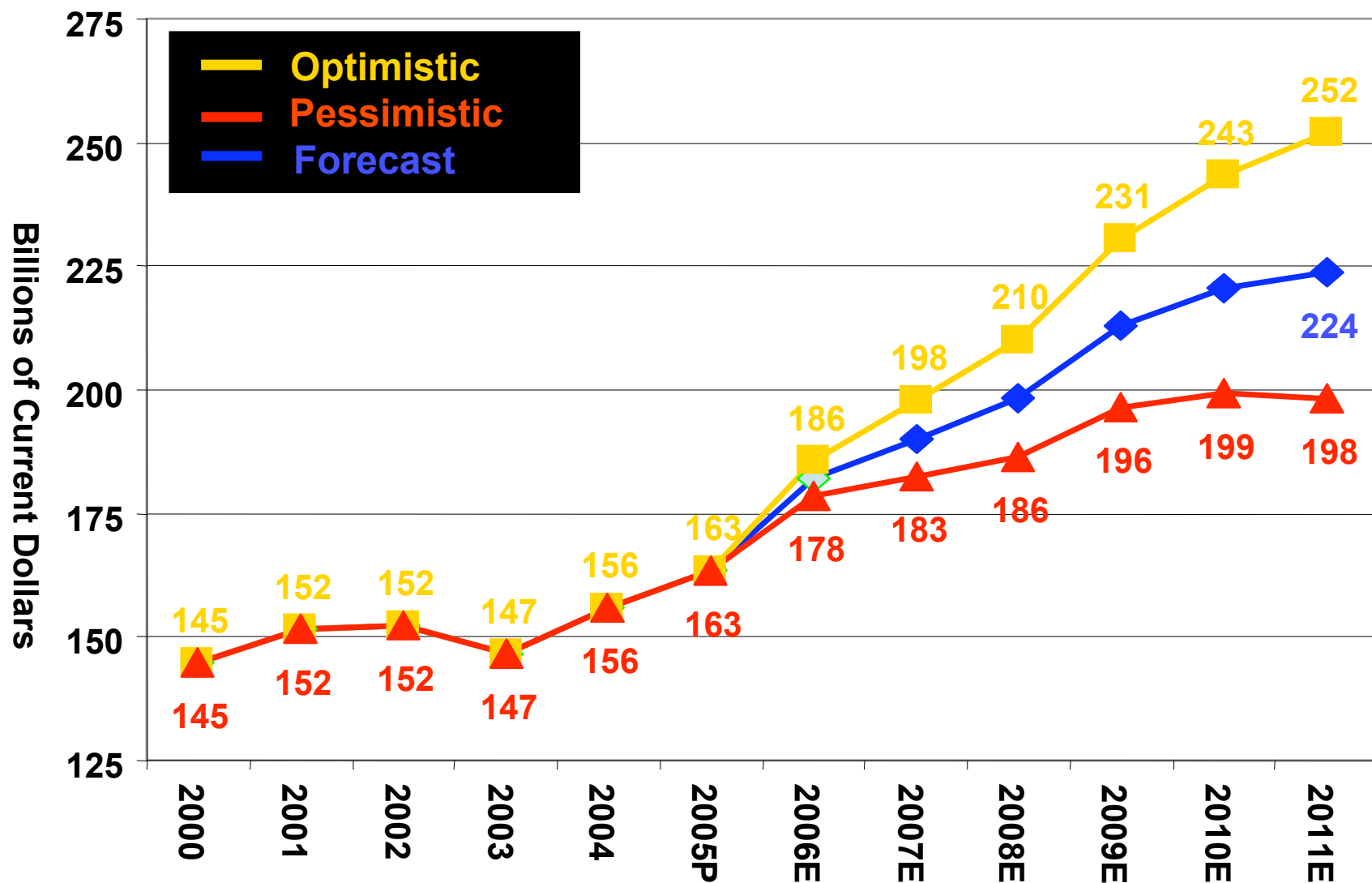
Aerospace Industry Sales





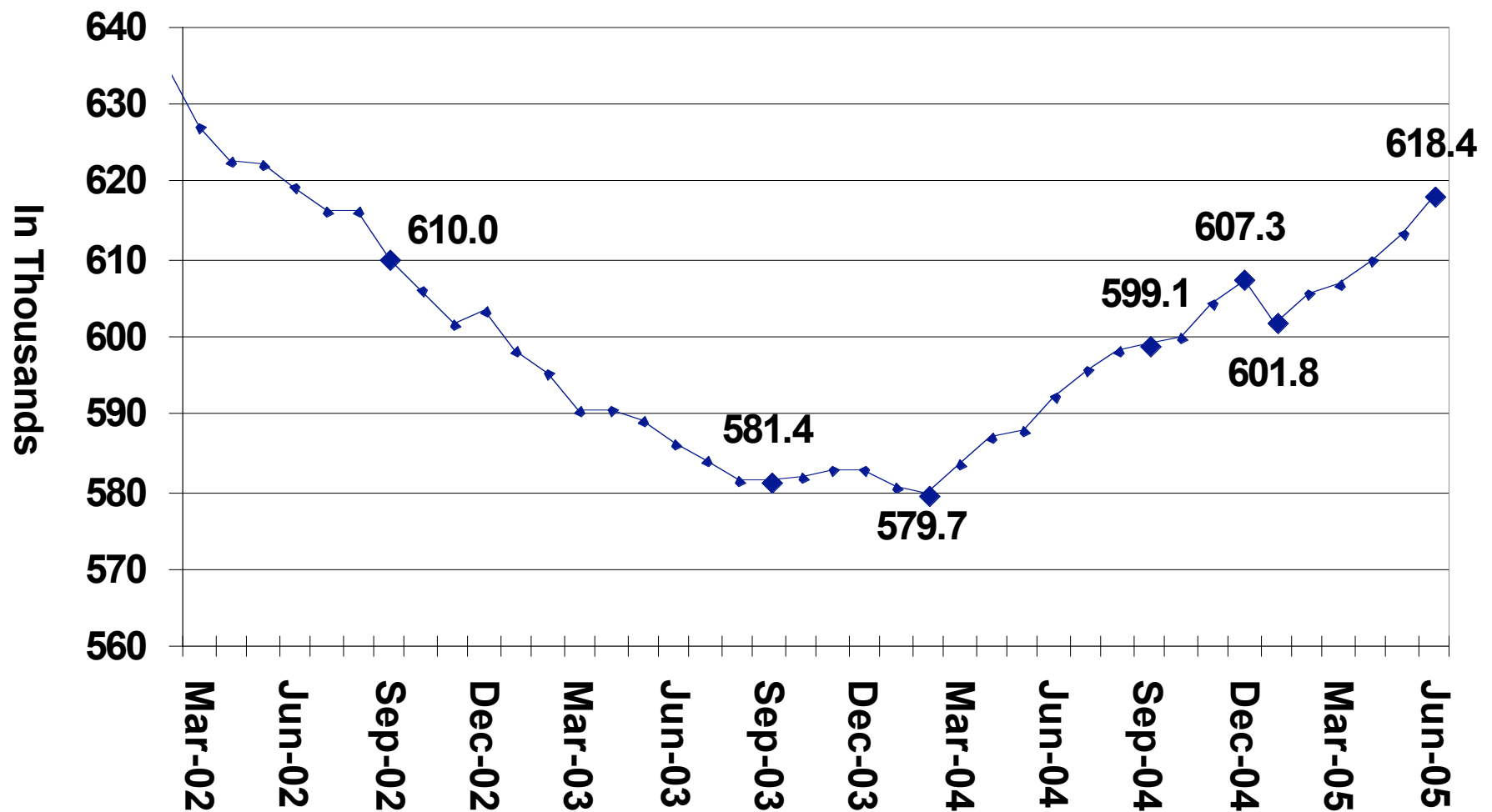
Industry Sales Forecast 2006-2011

Aerospace Sales





Aerospace Employment





Connecting the Dots

- **No single approach or magic bullet**
- **Robust Aeronautics & Space Exploration program**
- **Reach out to young people as early as possible**
 - **Outreach on all levels**
 - **Prior to college and high school**
 - **At risk and non-traditional students**
 - **Young engineers and other aerospace professionals to talk to kids**
 - **Outreach by actors, authors, sports figures and people in the news can assist in outreach**
 - **We need industry to actively support enabling organizations**
 - **Coordinated efforts among associations attracting kids to aerospace**



Workforce Revitalization Legislation

- ✈ H.R. 758, introduced by Rep. Vern Ehlers (R-MI) and passed by the House on October 25, 2005:
 - **Creates an Inter-agency Aerospace Revitalization Task Force to develop . . .**
“integrated federal government policies to promote public and private sector programs for science, engineering, technology, mathematics, and skilled trades education.”
- ✈ H.R. 27, the Job Training Act of 2005, passed by the House on March 3, 2005, urges the Labor Department to fund a pilot program on aerospace workforce revitalization.



SMART Scholarship

- The National Defense Authorization Act for FY 2006 includes a permanent extension for Science, Mathematics, and Research for Transformation (SMART) defense scholarship program
- SMART Scholars program served 35 students in FY 2005
 - SMART attracted over 160 applicants in its first year
 - 100 applications were “highly rated”
- Needs broader reach, alternate slots, and coordination across agencies



National Academies

Do we have the workforce to fulfill the space vision?

- **We looked at the issue in two aspects: pre-Crew Exploration Vehicle (CEV) and Post-CEV**
 - For pre-CEV, both NASA and Industry workforce are what they are and will have to suffice with minor tweaking
 - For post-CEV, both NASA and Industry have opportunities to ensure the proper workforce is available
- **We recognize that outside influences (e.g., budget increases/decrease in national security) will have either a positive or negative workforce impact for both NASA and Industry**
- **We believe there are examples within government and industry that have dealt with similar type of workforce concerns in the past**



Recommendations from Industry

- NASA should take steps to recruit and retain the precise workforce for the Vision
- NASA should look at Industry practices as a model to train and transfer skilled workforce to meet current priorities
- NASA should develop a mentoring program utilizing their current and retired knowledge base



Recommendations from Industry

- NASA should develop a program management and a systems engineering & integration training program (Industry & mentor driven)
- Create a transition plan by mapping needed skill sets (input/output model)
- NASA should look at ways to supplement its workforce from outside sources



Workforce Working Group

- **Short-Term Goals**

- Support Project Lead the Way (PLTW)
 - Aerospace curriculum roll-out (accelerate)
 - Encourage members to participate locally
- Marketing/Image Management
 - Coordinate PSA with DoL
 - Career Mapping for school career counselors
 - Presentation on benefits of aerospace industry
- List of other organizations and design competitions interested in STEM issues



Workforce Working Group

- **Long-Term Goals:**
 - Presidential Award for math/science
 - Faculty Fellowship Program
 - State Scholarships
 - Immigration Issues



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